REVIEWS.

ART. XII. *Lectures on the Morbid Anatomy of the Serous and Mucous Membranes.* In two volumes. Vol. i. By THOMAS HODGKIN, M.D. London, 1836.

THE situation of Dr. Hodgkin as Demonstrator of Morbid Anatomy and Curator of the Museum at Guy's Hospital, has rendered him eminently qualified to lecture or to write upon the subject of Morbid Anatomy.

The inspection of several hundred dead bodies, as he tells us, naturally brought under his notice a great variety of morbid appearances in most of the organs of the body; and in 1827 he began to lecture, commencing with the morbid anatomy of the serous membranes, and in the following year proceeding to parasitical animals; malignant diseases, and the mucous membranes.

Our author bases the arrangement of his course upon general anatomy; as he considers that it is only by collecting into one view the modifications produced by disease in any one tissue, that we can obtain accurate knowledge of the relations of these morbid alterations to each other, and to the healthy state. He begins with the serous and mucous membranes, because they are so generally diffused over the body, and because they are so frequently affected with disease. In discussing the abnormal alterations or conditions of these membranes, he adopts the following classification.

Deviations from the normal state consisting in:

1. Deficiency.
    - *a.* The result of imperfect development.
    - *b.* Loss sustained.
2. In excess.
3. In form.
4. In appearances which may be regarded as the result of ordinary inflammation.
5. In appearances which are the result of scrofula.
6. In appearances which are the result of diseases termed malignant or resembling them in structure.
7. In hydatids in the particular organ.
8. In the effect of accidental injury.

Dr. H. proposes to retain the word "inflammation," in preference to "hyperæmia," notwithstanding its rejection by Andral, who remarks that it is like a piece of money that has lost its stamp by wear, and has become unfit for further use. The old coin, Dr. H. remarks, may long continue much more convenient than the new, notwithstanding its indistinctness, especially if the new coin bear a different name and value. The word hyperæmia, though sufficiently expressive of the presence of an undue quantity of blood, is necessarily applicable to many cases distinct from inflammation, and at the same time is inapplicable to some states that belong to the various stages and modes of inflammation. In this we heartily concur with Dr. H. The abandonment of an old, well known term, and the introduction of a new one, we consider always objectionable and not to be admitted, unless for very strong reasons: for as there is no general and supreme authority to fix such matters, the new term will never come into universal use; and will only create confusion.

Medical literature is in much the same situation with one of our cities or large towns; as long as the old name of a street is preserved, every one knows where he is; but let it once receive a new name, and every resident in it has some good objection to the one adopted, or some preference to another, so that every successive year it receives a new designanation.

Dr. H. makes a distinct division for the effects of scrofula, which though closely allied to those of inflammation, have many distinguishing peculiarities. In the sixth section, are included cancer, fungoid disease, and melanosis, which present the remarkable character of depending on an adventitious structure; which derives its growth and nourishment from vascular connection with the parts in which it is situated; and is consequently very different from the mere degeneration of natural structures. With regard to hydatids, he considers them as parasitical animals; as they have no vascular connection with the parts in which they are found, and are rarely if ever found even mechanically attached to them; and they have the wonderful power of reproducing their kind often to a very great extent.

In his second lecture, Dr. Hodgkin proceeds to the general consideration of the morbid anatomy of the serous membranes. These membranes are the earliest developed in the embryo. According to some physiologists, the alimentary canal and the urinary bladder owe their origin to serous membrane. They are also more frequent in their formation, nature seeming to delight in the production of such membranes as the arachnoid, the pleura, the pericardium, the peritoneum, and the tunica vaginalis. The eye, the pulps by which the teeth are formed, and the synovial capsules consist in part of serous membrane slightly modified. The large extent of surface presented by these membranes, afford the best opportunities for observing the varieties in the modes of inflammation.

The ultimate structure of the serous membrane is believed to consist in extremely minute fibrillæ combined so as to form lamellæ. Dr. H. affirms that the idea that these fibrillæ are composed of globules arranged like a string of beads, is founded entirely in an optical deception. He has spent hours in the examination of this subject in company with Mr. Lister, the inventor of a very powerful microscope; and is perfectly convinced of the fallacy of the globular theory. The perfectly formed membranes, he thinks, without exception, consist of fibrillæ of tolerably even size, bearing no resemblance to beads. The imperfectly formed membranes answer the description given by Meckel. These membranes are supplied with blood vessels and absorbents which are extremely minute in the healthy state, but become preternaturally visible and distended when inflammation causes an increased effusion in the former, or when the secretion of the lymphatics is too abundant. The existence of nerves has been denied by some. They become highly sensitive in disease, yet active and fatal inflammation sometimes goes on in them with little or no accompanying pain. They possess a considerable degree of extensibility and contractility, as is evinced in pregnancy and parturition, and in the daily functions of the bladder and rectum. The microscopic observations of Mr. Lister and our author have convinced them that there is a greater similarity between the fibres of the arterial and serous tissues, than there is between either of them and the muscular.

Dr. H. considers that the serous and mucous membranes are transmutable into each other. The fluid secreted by the arachnoid is the most aqueous of the serous secretions. Next are the waters in the membranes of the ovum. The secretions from the ovum appear to be more charged with animal matter. We find in the cellular membrane of particular parts, close cavities which produce and contain a mucous secretion, and conduct us to the synovial bursæ and capsules, in which mucus obviously exists. Hence the transition is easy to the mucous membranes of the eye, the secretion of which is more allied to serous secretion, than that of most portions of this tissue. In accidental productions of a natural or analogous tissue so frequent in serous membranes, we find in some of the cysts a perfectly clear, limpid, aqueous fluid; in others a straw coloured serum; in others a fluid bearing the closest resemblance to synovia; and in a fourth class, a clear and perfect mucus. The serous membranes, moreover, undergo certain changes, the result of which is to convert them into mucous membrane. We do not find, however, in the physiological conditions of the organs themselves, such clear evidence of the convertibility of the one into the other, as has been offered with regard to the gradations that exist between them. He has repeatedly found the secretions of the pericardium glairy and bloody ropy from the quantity of mucus it contained. He has found the surface of the pleura lubricated with a viscid mucus which made the lungs feel as if smeared with saliva; and in inflammation of the pericardium, this membrane covered with muco-purulent effusion. In ovarian dropsies, which depend upon the development of large adventitious cysts, the first fluid evacuated is frequently thin and serous; that which is next drawn, is thick and loaded with mucus; and a fourth or fifth puncture evacuates puriform matter.

The morbid appearances common to the serous membranes, are in the first place suppression of secretion; the membranes becoming nearly or entirely dry. Gas is sometimes secreted in the cavity of these membranes. This is a rare phenomenon, and not to be confounded with cadaveric formations of gas. It is said to have been found between the layers of the arachnoid, sometimes in the pericardium, and more frequently in the peritoneum. These membranes may, through some alteration in their functions secrete air; but it is more commonly produced by chemical action taking place immediately after death. In this case it is usually attended with a peculiar smell, and may, on examination, be detected in other parts of the body. Excess of secretion, the fluid remaining unaltered, is another morbid condition. This excess constitutes the dropsies of the serous cavities, such as hydrocephalus, hydrothorax, hydrops pericardii, ascites, hydrocele, hydrarthus and ganglion. Alterations take place in the quality of the secretions. They sometimes acquire the character of mucus, are sometimes tinged with bile, and occasionally with blood. The admixture with blood is as often cadaveric as morbid. The confinement of this appearance to one cavity, the general state of the body and its freedom from other cadaveric changes, will generally distinguish the morbid from the cadaveric. In many cases, however, Dr. H. allows it is difficult, if not impossible, to draw the line. Blood has been found in the pericardium where no rupture of the heart or of any vessel was discoverable: not unfrequently in the pleura; often in ascites mixed with the usual fluid; and in hydrocele when it is sometimes pure, forming hæmatocele. Chyle may possibly have been found in the cavity of the peritoneum. That milk should be, is absurd and incredible. A light coloured puriform inflammatory effusion has probably been mistaken for milk.

Deficiency of a whole or a part of the more important serous membranes is rare, except in cases of deficiency of the parts with which they are in contact. Thus in acephalous fœtuses, the arachnoid must of course be wanting. The anterior part of the peritoneum, and the corresponding parietes, have sometimes been wanting, leaving the abdomen open. In these instances, in which the testes have not descended into the scrotum, the reflected portion of the tunica vaginalis is wanting.

Excess is more frequent. It may consist in the prolongation of normal membranes, such as occurs in the arachnoid in congenital protrusions of the brain; in the pleura, in which are sometimes formed appendices, giving a covering to collections of air or fat; in the pericardium and the synovial capsules, where similar appendices are sometimes formed; in the peritoneum, where these prolongations are most frequent and remarkable; in all cases of hernia, congenital excepted; and in the tunica vaginalis. Excess may consist also in the formation of new cavities.

Effects of Inflammation. These are the most common and the most important alterations to which these membranes are subject, and naturally occupy a large part of the attention of our author. The earliest effect of inflammation is the suppression of the secretion, leaving the membrane dry; a state which does not long continue, and can therefore be seldom witnessed on dissection. As the irritation subsides, transpiration returns; but if the inflammation has been violent, the serum exhaled does not possess the usual qualities. It becomes, in most cases, superabundant in quantity, and is mixed with some more solid material, giving rise to various forms of false membrane, and often rendering the fluid more or less turbid and opaque. Villermè considers the false membrane to be always the result of inflammation. He regards them as the matter of suppuration thickened and concreted. Where false membrane is not found after death, in persons supposed to have died of pleurisy, inflammation of the muscles must, in most cases, have been mistaken for it. According to Villermè, an indvidual may die after exhibiting all the marks of pleuritis, and no trace be found on inspection. Dr. H. has never met with an instance in which some marks of inflammation were not to be found. Where the patient has died upon the second or third day, no false membrane may be formed; but there is generally an effusion of sanguineous or puriform serum. In a few instances, he has found an effusion nearly or quite transparent, which, on removal from the body, possessed, though in a feebler degree, the coagulating power of the blood.

Dr. Hodgkin does not agree with Dupuytren, Villermè, and Sir Everard Home, in regard to the formation of the false membranes. He differs from them with regard to the organisable properties of pus or puriform fluid. This he believes to be always more or less excrementitious; and where an outlet from the body is not afforded, it retards the cure by interfering with the organisation of other substances formed at the same time, particularly the coagulating effusion noticed above. This, which is the coagulable lymph of John Hunter, is the most eminently plastic effusion, and as coagulation advances, it throws out tender diaphanous films, which are found separated by, and infiltrated with, a limpid and often straw-coloured serum. These false membranes are not opaque and cribriform, but continuous and transparent; a condition which militates against the idea of Villermè, who considers them produced by the aggregation of an infinite number of minute flocculi.

There is another form of effusion which is not plastic. It consists of whitish opaque particles diffused through the serum, which, when combined with the more plastic effusion, either renders it uniformly opaque and of feeble cohesion, or sprinkles it with opaque points, or with puriform or tuberculous matter. It differs principally from the plastic effusion, by its entire or nearly total want of vitality. False membranes possessed of this character are a constant source of irritation. The false membrane may itself become a secreting organ, sometimes yielding a particled puriform fluid, sometimes more plastic lymph, which may assume the most perfect membranous appearance, even when the first formed membrane is loaded with opaque matter. When the latter is more organisable, if it be not too much irritated by the inorganisable matter which it has produced, it eventually takes up as much of it as is capable of absorption, and shuts up the remainder in a cyst such as forms around a bullet or other foreign body; the opaque albuminous part being incapable of absorption.

In regard to the manner in which the false membrane becomes supplied with vessels, Dr. H. justly observes that the idea of a real generation of vessels is so repugnant to all our present notions with regard to the circulation, that it cannot be admitted; although red vessels are first seen in the false membranes, without our being able to trace any connection. The other theory, that these false membranes are the bed into which the exhalent vessels extend themselves, is more probable, and is supported by the fact that injections may be thrown into them from the neighbouring vessels. Dr. H. conceives that, at the inflamed part, the minute blood vessels not merely become distended, but that their delicate parietes, and the structure through which they ramify, become softened, and yielding to the pressure of the blood in the distended vessels, give way in numerous points. The very small quantity of blood thus permitted to escape, is not diffused, but is received into the false membrane, appearing in spots which soon assume a dendritic appearance, and, extending in length, become vessels. They are at first feeble and distended, and therefore larger than those from which they proceed, and hence the redness of newly formed membranes; but they afterwards contract and become nearly or quite invisible. The uniformity of size, and the straight and parallel course of the vessels in newly formed false membranes, give them the appearance of muscular fibres.

Where the effused material is most abundant, organisation is most difficult. The surface of the effusion first becomes consolidated, and thus shuts out the internal part from the rest of the cavity; and this, if its organisation does not proceed, becomes converted into pus, and may be gradually absorbed.

When the adhesions produced by the matter effused are not universal, and the motion between the serous surfaces is considerable, lengthened bridles are sometimes formed. Sometimes a delicate false membrane, the product of a highly plastic inflammation, is raised by the serum between it and the original serous membrane, so as to produce bladders or cysts of various sizes and shapes, sometimes resembling clusters of grapes, in which state they have been mistaken for hydatids. Sometimes they become cylindrical, and form a *cul de sac*. The production of false membrane in the form of cyst, occurs most frequently in the peritoneum. Detached bodies are sometimes found in the cavity of a serous membrane, formed, as Dr. H. supposes, from an isolated clot of coagulable lymph, which, in process of time, acquires a firm and membranous surface. In the soft and recent state, these are of the size and figure of an egg plum, but in the firm and advanced stage, not larger than a pea or a marble.

There is another form of false membrane, which is from the first more adherent to the serous surface than either the very recent membranous films, or the opaque inorganisable flocculi. It has a firm and dense structure, does not become even visibly vascular, and presents an uneven, unattached, sometimes scabrous surface, towards the interior of the cavity. Inflammation, it is probable, may be set up at successive periods, in different parts of the same serous membrane.

When inflammation has attacked any of these tissues, it has a strong tendency to spread. This is most conspicuous where the inflammation is idiopathic; but in cases of injury, the inflammation is more frequently limited to the neighbourhood of the lesion, particularly if both surfaces of the membrane are injured. If a patient have recovered from a wound in the thorax, by which both pleura costalis and pleura pulmonalis have been injured, the pleuritic effusion will probably be found confined to the immediate vicinity of the wound. Wounds of the dura mater, which open into the cavity of the arachnoid, are attended with very great danger, being liable to produce inflammation of that membrane to a very great extent. Yet, when the injury has been greater, extending through the membrane into the brain, and even producing a loss of substance in this organ, the symptoms are comparatively slight. Hence the late Henry Cline, Jr. suggested the propriety of designedly lacerating the arachnoid and pia mater, in cases where the dura mater had alone been wounded.

The false membranes have a tendency after a time to become hardened and contracted, and lose their vascularity. They become narrower, forming bridles, which in time may be separated by a natural process. To this contraction of the false membranes, Dr. H. attributes the remarkable retrocession of the chest in a patient who recovers from empyema. In persons affected with jaundice, these membranes are tinged with yellow.

When the effusion has been small in quantity, much diffused, and of the most plastic quality, it ultimately becomes a loose cellular web. When the quantity has been greater, and the inflammation protracted and chronic, very probably from the admixture of opaque particles, the form ultimately assumed is dense and semicartilaginous.

Pressure diminishes the amount of the fluid secreted. Thus when the lung is inflamed at the same time with the pleura, the lung does not become collapsed, as after cases of simple pleurisy; and we find the solid product of inflammation abundant, while the serum seems to be nearly or entirely absent.

Serous infiltration of the cellular tissue is very common, and is more frequent and remarkable where the membranes are thin, hence the best examples of it are seen in the arachnoid and in the tunica vaginalis. The swelling of the scrotum from infiltration of the cellular membrane is a well known consequence of the injection for the radical cure of hydrocele.

The formation of bony plates beneath the serous membranes is a frequent occurrence, as the material there effused has a tendency to become dense and hardened, the covering afforded by the membrane favouring the deposition of bony matter. The opposite state, in which the effusion is more or less puriform and widely diffused, and the cellular structure very lacerable, is found in conjunction with the turbid and puriform effusion into the cavity of the serous membrane.

The subserous cellular membrane is sometimes itself primitively affected. It affords the bed in which commence those adventitious deposits described as steatoma, cancer, tubercles, hydatids, and scrofulous, fungoid, and melanoid tumours.

Gangrene is extremely rare, especially in idiopathic inflammation.

The effects of scrofula are not confined to the production of distinct collections of a scrofulous deposit in the cellular membrane, or the attached surface of the serous. Collections of tuberculous or scrofulous matter are sometimes found on the smooth unattached surface. The varieties of malignant disease are almost exclusively confined to the subserous cellular membrane; yet we may occasionally find minute bodies having the character of scirrhus, in the substance of serous membranes, in individuals known to be the subjects of malignant disease. The presence of hydatids in the serous cavities must be looked upon as wholly accidental, the consequence of their escape from the seat of their formation.

Wounds penetrating these cavities are apt to develope a form of inflammation which is characterised by the want of plasticity of its effusion.

It is rare for one serous membrane to communicate its inflammation to another in its immediate neighbourhood. Traces of inflammation, however, are often found concurrently at the base of the right lung and on the convex surface of the liver. The same thing is observable, though less frequently, with respect to the left pleura and the peritoneum in the neighbourhood of the spleen. The serous membranes are united by an inexplicable but indubitable sympathy. Thus in rheumatism, the inflammation of the synovial membranes is often followed by pericarditis. At other times it is the pleura that is thus affected. Dr. Foville has seen articular rheumatism subside upon the sudden production of hydrocele, and again, a return of the rheumatism upon the cure of the tumour. That species of inflammation of the kidney which has been described by Dr. Bright is accompanied by a general tendency to disease of the serous membranes. A proof of the morbid sympathy existing between the serous membranes may also be seen when they are affected with cancerous or fungoid tubercles. When growths of this kind have been formed about the peritoneum, there is not unfrequently found a sprinkling of the same kind about the pleura; and sometimes, though more rarely, about the pericardium.

We have thus given a pretty full abstract of our author's second lecture, which may be considered as a summary of the contents of the volume, particularly so far as relates to normal serous membranes. He next proceeds to the consideration of each membrane and the alterations produced by disease, treating of these alterations according to the arrangement given in the table. The third lecture is occupied with the Arachnoid.

Dr. H. divides this membrane into four portions, the alterations of each of which he discusses separately. The first portion is that which is external to the brain. The second, that which lines the ventricles. The third is the portion which belongs to the plexus choroides. The fourth is that of the spinal chord.

First portion.—The product of inflammation here, is more frequently purely serous than elsewhere. Dr. H. has seen only one instance of puriform secretion or false membrane between the polished surfaces of the arachnoid, and in this case the inflammation appeared to depend upon a local cause; the irritation excited by a lumbar abscess which communicated with the spinal chord. Dr. H. thinks such effusion may take place without external cause. As a consequence of injury, it is not uncommon.—Adhesions between the two surfaces are very rare; but sometimes met with, particularly after some cause of local irritation, such as tumours or injuries of the head.

The results of inflammation on the attached surface, especially that in contact with the pia mater, are as frequent as they are rare on the polished surface. "It is in this situation we are accustomed to look for and find, pathological appearances, in those cases of acute disease which are marked by a high degree of fever, by pain of head, delirium, convulsions, and often ultimately by coma; symptoms, which in children are recognised as indicative of acute hydrocephalus; and in adults, of brain fever, phrenitis or rather meningitis, if the practitioner be acquainted with modern pathology.

After the most active symptoms of arachnitis we often find nothing but serum infiltrated behind the arachnoid; but we sometimes meet with a coagulable and more frequently a puriform effusion. In almost every case of arachnitis the membrane becomes thickened. A large quantity of serum is sometimes found beneath the arachnoid covering the brain, in cases where the inflammation, if any, must have been of a very chronic character. Ossific deposits are rarely found beneath the arachnoid investing the brain, but they are often found between this membrane and the dura mater lining the cranium. Fungoid tumours are sometimes formed in the pia mater, of the size of a cob nut, producing a corresponding depression upon the surface of the brain, which does not appear otherwise affected. In other cases, the brain has participated in the disease.

Second division.—Arachnoid lining the ventricles. "This membrane may be the seat of either acute or chronic inflammation. In both of these states, there is often a copious effusion of a purely serous character, constituting either acute or chronic hydrocephalus internus, in the same manner that the serous effusion under the arachnoid covering the convolutions constitutes hydrocephalus externus. This is the most frequent effect of arachnitis affecting that part which lines the ventricles; and in conjunction with this effusion, the membrane becomes thickened, semitransparent, pulpy, and sometimes sprinkled with minute spots of blood."

It is rare to find flakes of recent coagulating lymph in this situation, but we sometimes meet with old adhesions. The inflammatory effusion is sometimes of a non-plastic character assuming the appearance of a thin sero-purulent fluid. The surface of the membrane is occasionally sprinkled with very minute and tolerably firm elevations, resembling finely powdered glass.

Third position.—Arachnoid of the Plexus Choroides. When serous effusion takes place here, it is generally collected into small cysts, which give to the plexus an appearance like that of a bunch of currants. They vary in size from that of a millet seed to the diameter of a third of an inch.

The plexus occasionally exhibits numerous opaque whitish spots diffused through its whole length. It is, however, more common to find the effused matter collected at a particular spot, which is generally near the commencement of the descending cornu. This has sometimes occurred on both sides, forming a well defined tumour as large as a barbary-berry, or even a horse bean. These bodies are sometimes soft, but they are liable to become loaded with earthy matter, giving them the character of petrifactions. The plexus is sometimes found extremely exsanguineous and pale, even when there has been much cerebral excitement.

The cerebral arachnoid is liable to effusions of blood either spontaneous or from violence. The possibility of these effusions, Dr. H. considers a sufficient answer to those who doubt the existence of a lining membrane to the dura mater. He gives a case in which it occurred at Guy's Hospital. The production of scrofulous tubercles, and the development of fungoid tumours, he considers additional proofs, if any were wanting. Fungoid tumours formed on the attached surface, not merely raise the membrane and demonstrate its existence, they sometimes occasion the absorption of the dura mater, and ultimately the cranium, so as to protrude externally.

Fourth division.—A. of the Spinal chord. This Dr. H. tells us has been found by Dr. Sharpey, to consist of four layers; one being the dura-matral sheath; one investing the chord itself; and two layers within these, so closely applied, and in general so thin and diaphanous, as to appear but a single membrane. The cellular membrane of the arachnoid which forms the pia-matral covering of the medulla, is less vascular and less loose and abundant, than that of the brain, but closely resembles that covering the pons varolii and medulla oblongata, with which it is continuous. Congenital deficiency of this membrane seldom or never occurs. An example of its excess is found in spina bifida.

Inflammation of the spinal arachnoid is not rare, but the patient seldom dies at a period sufficiently early, to allow of the inspection of recent alterations. The fluid effused, even when the result of inflammation, is more frequently serous than puriform. A small quantity of lymph may sometimes accompany it, as is proved by the old adhesions not unfrequently met with.

The thickening and contraction of the spinal arachnoid, Dr. H. considers as an occasional cause of paraplegia, which will be more or less complete, according to the amount of compression exercised on the spinal chord. When the case is not an extreme one, progressive improvement may take place, both by the chord becoming accustomed to the pressure, and by the slow and partial absorption of the adventitious deposit within the membrane. To this cause, he attributes the gradual improvement sometimes witnessed in paraplegia; and adds a caution against the perseverance in very active measures of treatment, such as copious local depletion, deep and extensive issues, &c.; which may increase the dangerous sloughing of parts exposed to pressure, while deprived of their ordinary degree of innervation.

When the membrane has been injured by violence or excessive cold, the spinal chord itself is sometimes softened, or its cineritious substance is unusually injected, sometimes it presents a vermiform or annulated appearance, which may be attributed either to the compression of the contracted arachnoid, to the turgescence of the affected part of the chord, or to both causes combined.

Small patches of bony or cartilaginous matter are sometimes found about the chord, from the size of a pin's head to that of the finger nail or more, and varying in thickness from that of a peppercorn to a melon seed. These spots are frequently met with in tetanus, fatal chorea, and other diseases in which the spine has been supposed affected, and they have been considered a cause. They are however not always found in such cases; and they have been found in subjects, where these symptoms were wanting. Dr. H. regards them, however, as undoubtedly morbid secretions, and as indications of such a want of integrity in the chord as may predispose to tetanus, chorea and the like affections.

The pericardium forms the subject of the fourth lecture. This Dr. H. remarks, forms one of the best examples of a serous membrane. It is rarely deficient, most cases of its supposed absence being probably merely cases of pericarditis terminating in its close and universal adhesion, but two undoubted instances are recorded, one by Dr. Baillie, and the other by Breschet. He knows of no example of congenital redundancy, unless the bridles and membranous bands which unite its two surfaces are congenital; an opinion held by Tioch and others, but to which our author does not incline. It is preternaturally increased in size, in hypertrophy of the heart, in cases of inflammatory or hydropic effusion, and from the development of tumours. The effects of inflammation are such as belong to the serous membranes generally. Its secretion is often preternaturally increased, forming hydrops pericardii, which may, in general, be distinguished from pericarditis, by the presence, in the latter, of a few films of false membrane. These two diseases have a tendency to pass into each other. Dr. H. thinks that pericarditis is much more common and much less dangerous than has hitherto been supposed. When the quality as well as the quantity of the fluid effused is altered, we have either coagulable lymph or an effusion of a more puriform character. The former leads to the formation of the most perfect cellular adhesions. The surfaces of the close and reflected portions, sometimes become so intimately united as to give rise to the opinion above alluded to of the absence of the pericardium. In other cases, the adhesion is looser. In a third variety, it is formed of a multitude of filaments. In a fourth, by broad and membranous layers. Bridles of adhesion connecting the opposed surfaces are common. Our author thinks that adhesions are correctly considered as always the result of inflammation. When there is much non-plastic matter effused, their production is prevented; in which case the surface of the heart is not unfrequently covered with long shaggy, soft, and very feebly organized villi. It is this appearance that has given rise to the improbable stories of the heart being found covered with hair. In other cases, in which adhesion is prevented, the surface of the false membrane presents a reticulated appearance which has been compared to the *bonnet* or second stomach of a calf. When the matter is of the most inorganizable kind, it has a puriform appearance.

The pericardium is apparently more prone than any other serous membrane to assume the scabrous appearance, spoken of above. Plates of bony matter are apt to form upon the attached surface, and when extensive, it has been erroneously described as ossification of the heart. The opaque white patches which are often found upon the surface of the heart, our author considers as the result of pressure; that of an uneven and remarkably indurated liver, for example: or a bony deposit beneath the reflected pericardium. The motions of the heart aid the effects of pressure in producing these appearances. Traumatic pericarditis is of course very rare. Dr. H. refers to one case, mentioned by Dr. Ferrus. Gangrene is extremely rare. Bloody spots are sometimes found, and are the effect of purpura rather than inflammation. Scrofulous tubercles are very uncommon. Tumours are, perhaps, sometimes, though not often met with. Acephalocyst hydatids have been found between the close pericardium and the substance of the heart. In one specimen, presented to Guy's Museum, there were acephalocysts of various sizes, sufficient to fill a quart measure. The sac containing them was situated in part, beneath the close pericardium, and in part beneath the pleura pulmonalis of the right side.

Lecture fifth embraces the morbid conditions of the pleura. The inflammatory effusion here often assumes a semi-cartilaginous appearance, especially when the inflammation is chronic, which it is liable to become when the fluid part of the effusion is not absorbed; or when organization is retarded by the presence of non-plastic matter. When this matter is very abundant and diffused through the fluid, in the form of minute particles, it constitutes empyema—a term now generally restricted to the collection of a puriform fluid in the cavity of one of the pleuræ.

Our author proceeds to a full and interesting discussion of the subject of empyema. He observes that the most favourable termination of chronic pleuritis consists in the contraction of the chest; which often takes place notwithstanding the presence of a considerable quantity of inorganizable matter, which remains after the serum is absorbed or removed. This matter is shut up in a cyst or envelope, and sometimes acquires a bony structure. It is the contraction of this new membrane, rather than the absorption of fluid, which causes the contraction of the chest that ensues to a remarkable degree, while it had hitherto been preternaturally distended. The fluid of empyema is sometimes evacuated by a process called empyema of necessity, in which a spontaneous opening is formed. Dr. H. thinks that this process is conducted in a manner more common in the peritoneum. When a considerable quantity of inorganizable matter has collected, ulceration takes place in that part of the serous membrane, with which it is in contact; and by a continuation of the same process, the external opening is effected. This supposition of our author is the more probable, because this process resembles that generally employed to remove a foreign substance from the body; and it is in this light, that the inorganizable matter must be considered.

His remarks upon the method of making the opening for the escape of the fluid of empyema, are worthy of attention. Where the operation is not urgent, he prefers the use of caustic to that of the knife or trocar; because, in the first place, this method resembles the process of nature above described; and, secondly, because strong external irritation is one of the most powerful means of promoting absorption. Whilst we are preparing for the escape of the effusion, we are giving nature the best chance of removing it herself, and we perhaps may find that before an opening is effected, the plan may be changed, and the cure completed by one or more additional cauteries. The use of the trocar may be resorted to subsequently, if it should be necessary, and with greater probability of a favourable result; since the cavity is found in some degree prepared for the opening, whereas it is taken by surprise, when the trocar is first used. Dr. H. mentions an instrument, contrived by Dr. T. Davies, for making an experimental opening of the chest. It consists in a needle-pointed stilet, which gradually increasing in size, becomes, at its thickest part, of the size of a crow-quill.

The fluid of empyema sometimes finds an exit, by a communication between the cavity in which it is seated, and the bronchial tubes. This produces one of the most frequent forms of pneumo-thorax, and it is, in these cases, that the stethoscopic sound called "metallic tinkling" occurs. For the production of this symptom, there should be not only a large cavity containing both air and a liquid, but likewise, a communication between this cavity and the air tubes. It takes place also in those cases of phthisis, where a large portion of the lung is excavated.

Dr. H. describes a particular appearance of the pleura which occurs when the matter deposited by chronic inflammation has assumed a close, compact, and almost semi-cartilaginous character. It is produced, as he supposes, by the presence of a soft, yet concrete and inorganizable material, which interferes with the organization of the false membrane, and hence produces depressions in it, giving it a worm-eaten appearance, resembling the effect of ulceration. This material is easily removable, leaving a clean and well defined margin and surface to the depression which it has occupied.

In the sixth lecture the peritoneum, tunica vaginalis, and bursæ are considered. Dr. Hodgkin discusses, as in the other membranes, the degree of proneness of this to deficiency or excess; the alterations of its secretions and the effects of inflammation. He describes a circumstance not particularly noticed by other authors, the formation of false parietes from excess of plastic matter. This false membrane is firmly united to the intestines, dipping down between their evolutions; presenting an even surface to the parietes, and remaining unattached to them, except at the margin of the layer formed by the adventitious deposit. He relates a case in which this formation occurred.

A peculiar result of inflammation is met with occasionally, which is confined to the surfaces of the liver and spleen. It consists in a very remarkable semicartilaginous thickening, interrupted by spots of a circular figure and small size, at which the thickening is either very inconsiderable or is wholly wanting; they may be either distinct or confluent. The surface so affected has a honey-comb or worm-eaten appearance, like that noticed in the pleura. Dr. H. has seen two cases in which the free surface of the peritoneum appeared to be deranged by malignant disease. Detached secretions of a rounded figure and semicartilaginous or bony form are met with occasionally.

Within the synovial capsules loose bodies are sometimes found which Dupuytren supposed to be hydatids. Our author believes them to owe their origin and form to the obstacles which even the most plastic inflammation must find to the production of adhesions. The most violent constitutional irritation has followed a puncture for the removal of these bodies.

The dropsy of the serous cavities would seem from the observations of our author to be more frequently the result of inflammation of these membranes than other recent writers suppose. Disease of the heart or lungs, disease of the liver with obstruction, Bright's disease of the kidneys, may be occasionally causes of ascites, but one of the most common causes, he says, is exposure to cold. Although the effusion may have commenced independently of inflammation, the effused fluid is very likely to set it up in a chronic form.

The seventh lecture is occupied with a digression upon the subject of parasitical animals. This might seem rather out of place in connection with the serous membranes, particularly as it includes those which infest the intestines. Our author, however, conceives this to be necessary before proceeding to the abnormal serous membranes, which come next in order, because the adventitious serous cysts have so generally been confounded with hydatids. Dr. Hodgkin considers hydatids as parasitic animals, because they are found living distinct and unsupported by any connection with the organs in which they are met with. They also have the peculiarity of producing each other. The natural cure of hydatids is effected by the formation of a communication between the cyst containing the hydatids and either the surface of the body, the intestinal canal, the bladder, or some other cavity that has an external outlet. In other cases the animal dies, its fluid is absorbed, and its membrane is folded and shut up as an inert body within the outer cyst, which contracts upon it. Their death is occasionally followed by an abscess. Dr. H. thinks that cures might undoubtedly be effected by art. Some remarkable cases appear to have been treated with success by Dr. Recamier. He suggests the trial of acupuncture or electropuncture. From the effect of turpentine and of Deppel's oil as anthelmintics he thinks them worthy of trial internally and externally. Saline purgatives have sometimes caused their evacuation. When they are abundant in different parts of the body, their death is not desirable, as the irritation produced by the presence of so many inert bodies, must be attended with serious consequences. Our author notices the trichina spiralis, a little worm affecting the muscles of voluntary motion, which has been recently discovered. Richard Owen, by whom it was first observed, considered it allied to the eels found in paste and vinegar. Dr. H. adopts the theory of the existence of seminal animalcules, which has been disputed, and admits the possibility of spontaneous generation. In these two points we cannot agree with him. The latter seems to be somewhat involved in the former, and in the separate existence of hydatids. It is easy to conceive that the eggs of those animals that are found in the intestines are introduced into the system in various ways, but the hydatids, if animals, seem to be viviparous, not oviparous; and at any rate, they are found in parts of the body to which there is no external inlet or avenue. The same is the case with the semen. Although, therefore, the doctrine of the separate existence of hydatids seems to be pretty generally adopted, we confess it is one to which we cannot reconcile ourselves. We have not room, however, to discuss this subject at present.

In the next chapter, we come to the adventitious serous cysts. Our author remarks that whatever may be the nature of hydatids, he thinks he has given sufficient reason for their distinction from these cysts; the former being found loose and unsupported, and the latter closely attached and nourished by vessels proceeding from the part in which they are contained.

These cysts are divided into two classes, those that form around an external body, and those that produce their own contents. The second class form the subject of present consideration. Of these he wishes to distinguish and set aside, four species that have been classed with them as producing their own contents. 1. Hydatids; 2. subtegumentary encysted tumours; 3. cysts formed by the parietes of an obstructed canal; 4. cysts formed by the distention of natural cells; such as the enlarged vesicles of De Graaf; 5. cysts formed in the thyroid gland, such as constitute bronchocele.

Having set off these, he divides the remainder into two classes, simple and compound. The first are found solitary, or if associated with one or more similar to themselves, the connection is merely accidental. The other class possess the remarkable property of giving rise to growths, having the same character with themselves.

Serous cysts of the simple class are found in the plexus choroides, in the eyelids, in the lungs, in the mamma, and in the neighbourhood of the uterus.

Of the compound cysts, the largest and most interesting are those which are found in the neighbourhood of the uterus, in or near the ovaries, and in the folds of the broad ligament. The parietes of these cysts are found studded with elevations or tumours, which, upon examination, are perceived to contain within them other tumours of a similar kind, the membrane or cyst of which covers the outer tumour, being reflected so as to form the cyst of the one within it. Besides the contained cyst, there is found also a quantity of serum or mucus in each sac. Cysts of the secondary order, Dr. H. observes, not unfrequently afford as complete a specimen of reflected serous membrane, as the pericardium or tunica vaginalis. These tumours are distinguished from hydatids, because the secondary cysts are attached to and continuous with, the internal surface of those in which they are contained; and because delicate vessels are seen ramifying from the one to the other. The superior cysts sometimes become distended and ruptured by the formation and growth of an inferior order of cysts, or by the accumulation of fluid, and discharge their contents into the containing cyst; and thus allow of the unrepressed growth of those which they contain. The cysts thus opened, bear a considerable resemblance to mucous follicles, and appear to be the principal source of the copious and rapidly formed mucous secretion, characteristic in many cases of ovarian dropsy. The effusion of plastic matter, when the membranes of these cysts become inflamed, produces adhesions which render it difficult to demonstrate their structure. There are two varieties, which differ from those above described, the first consisting in the attachment of the contained clusters by slender peduncles, and the second, by broad and flat connections. The three forms may however exist in one cyst, though there is generally a preponderance of one or the other.

A possible cause of these tumours, Dr. H. thinks, may arise from the lesion attending the escape of vesicles, which may occur in virgins as well as others. This growth is more rapid, because the parts in which they arise are accustomed to obey a stimulus to an increased supply of nourishment: because these parts are abundantly supplied with blood; and because the situation exempts them from all pressure or restraint. Dr. H. thinks that the only effectual cure is by their extirpation, to which he thinks there can be no absolute objection, if done sufficiently early.

The same form of tumours occurs in what has been called hydatid testicle, and hydatid breast. Sometimes it occurs in the eye. One of the forms of staphyloma, which is not malignant, appears to be of this nature.

In the ninth lecture, we have the consideration of the results of malignant disease. Here we have: first, adventitious cysts accompanied with a constitutional taint. Second, scirrhus. Third, fungoid disease. Fourth, melanosis. Our author thinks that all these have general points of resemblance. He believes that the common method of examining such tumours by making sections through their substance, especially after they have been immersed in alcohol, is deceptive, and that the best preparations do not supply the place of recent specimens.

By a carefully conducted dissection, we shall, according to him, arrive at appearances similar to those described in the last chapter. He describes the formation of these heterologue tumours as analogous to that of the ovarian cysts. In short, if we conceive of the various forms of cyst which may be composed with a reflected membrane, such as the tunica vaginalis, we have the composition of these tumours. Within the larger cysts are secondary cysts, in the same manner as in those before described. Pressure, impeded nutrition, and deaths are occasioned in these as in the ovarian tumours, by strangulation from the growth of the secondary cysts. The effect, however, is different. The dead cyst, having become a foreign body, excites inflammation in the parts with which it is in contact. The result of this, is the formation of a cavity filled with broken down and softened matter, intermediate between suppuration and gangrene. This often takes place before the tumour shows any external symptom of irritation or inflammation, but it requires that the supply of nutriment should be pretty promptly cut off by the natural ligature.

These tumours produce by their irritation a thickening of the surrounding cellular membrane to a less or greater degree, and dilate the integuments so as to become visible externally. The points most distended inflame, and the inflammation proceeds to ulceration. The tumour either sprouts vigorously in consequence of the removal of pressure, or what is more frequent, participates in the ulceration. The ulcer formed has been considered characteristic of malignant disease. It has elevated and everted edges with a ragged and depressed central portion which is bathed by an unhealthy secretion.

Its growth is most luxuriant at its circumference, both on account of the want of pressure, and from the increased supply of nourishment. The central parts have to encounter the pressure of the surrounding parts of the tumour; and at the same time, all supply of nourishment from the natural structures, is cut off by the ulceration of the integuments. The depth and irregularity of the ulcer is increased by a communication which is formed with the cavity in the interior of the tumour. By making a section through the diameter of the ulcer in a recent specimen, proof will almost always be found, that the elevated margin is composed of radiating pedunculated bodies; whilst in the centre, this disposition is less distinct; the structure is more condensed and there is little if any trace of organization.

With regard to the manner of distinguishing malignant tumours our author concludes a discussion upon this subject as follows: "For my own part, I should, in examining a tumour in the living subject, be in general disposed to suspect what has been called malignity, whenever I could detect indications of the structure which I have described, accompanied with alterations of the surrounding structures, referrible in their origin to some external violence, or to a pre-existing indolent tumour. These suspicions would bé proportionally stronger, if the tumour in question occurred in a part known to be rarely if ever affected with that now malignant and well defined form of tumour commonly termed 'hydatid,' which in common with those of a malignant character, distinctly possesses the structure alluded to. My suspicions would be converted into absolute certainty, in proportion as the other symptoms previously detailed were united to those which I have assumed, as presenting themselves in the suspected tumour."

Dr. H. remarks that the structures of the body possessed of the best vitality, such as nævi materni, the thymus gland, the suprarenal capsules, the mammæ are, most frequently, the seats of malignant disease, This liability he considers to depend rather upon innervation than upon vascularity.

The distinctions between scirrhous and fungoid tumours, form the subject of the next lecture. True scirrhous tumours sometimes appear to depend upon a single primary tumour; at other times, several can be distinctly traced. The part of the tumour which appears to have been the common origin of the primary cysts, where there are more than one, or from which the contained pedunculated bodies radiate, when there is only a single primary tumour, is, in general, the most indurated portion, and at the same time, the most indistinct in its structure. When examined after the surrounding structures have been carefully dissected off, this part is found irregular and corrugated, suggesting the idea of its having formed a sort of root to the adventitious structures. True scirrhus may remain indolent for a length of time. Before ulceration takes place, the tumour becomes adherent to the skin, and a small spot becomes of a bright or cherry red, or a livid purple colour, before the skin is broken.

Dr. H. is of opinion that scirrhus never degenerates into fungus, although they frequently exist in different parts of the body of the same person. True scirrhus, he thinks, has sometimes been cured spontaneously, the tumours becoming detached by the sloughing of the surrounding tissue, and thus completely thrown off from the system. The occasionally successful practice of empirics, whose principal agent appears to be arsenic, consists, he thinks, in the attempt to induce this process artificially. He mentions a lady afflicted with cancer of the breast, who placed herself under the care of a female quack; and by the use of secret means, the tumour was detached entire. The wound was closed, leaving a very trifling cicatrix, and the lady has had no return of the affection. Dr. Viale at Rome, informed him that he had long been in the habit of adopting a similar plan, in malignant and other tumours, with very considerable success.

Fungoid disease may, in general, be distinguished from scirrhus by its more rapid progress, the prodigious size to which the tumours sometimes arrive, and by its superior vascularity. Its greatest ravages occur in the young; while true scirrhus is almost exclusively the disease of advanced life. The fluid matter is very abundant in the former structure, while in scirrhus it forms scarcely a notable part. The secondary cysts of fungoid tumours, which are often large, generally become filled with a material at first resembling feebly coagulated fibrine or plastic lymph. New vessels shoot into this substance which loses its vitality, gradually becomes opaque, and resembles the brain of a child.

The cellular structure around scirrhous tumours becomes frequently inflamed by the irritation they produce, and is thereby thickened and indurated. The implication of the nervous fibrillæ in this altered structure, Dr. H. considers the cause of the peculiar and lancinating pains that attend an access of inflammation to which the affected part is constantly liable.

The eleventh lecture, upon the subject of colours, we must pass over, and proceed to the twelfth, and last of this volume, which is occupied with those malignant tumours that have obtained separate attention in consequence of their colour.

The first of these is cirrhosis, which he considers only a modification of fungoid disease, and hardly requiring separate consideration. The yellow colour is merely an accidental character attached to a particular form of malignant disease, in a particular state of its existence.

Melanosis derives its black colour from a highly venous state of the blood, induced by its prolonged stay in the vessels. It has always an encysted form. When the tumours are situated in loose cellular membrane, they have always a rounded shape; but when subjected to pressure, they are modified by this cause. The two most obvious characteristics of melanosis are the black colour, and the production of a new growth possessed more or less distinctly of the characters of the whole group of adventitious deposits that have been described. Dr. H. describes lastly a species of firm fleshy tumour, distinguished by its peculiar structure, and the obscurity of the encysted character, which nevertheless essentially exists in it. The best specimen he had seen grew from the neighbourhood of the scapula. He regards them as of a fungoid nature. This lecture concludes with a full discussion of the various theories which have prevailed or have been put forth with regard to malignant tumours. The appendix contains many cases in addition to those dispersed throughout the lecture, illustrative of the doctrines and descriptions therein contained.

The whole of the volume is highly interesting, the style of our author is elegant, and his descriptions are clear and lucid, and undoubtedly accurate. Perhaps he may be a little disposed to theorise: an inclination with which the less fault can be found, since his high standing as a morbid anatomist, render even his theories valuable. The diffuseness of the lecture style, while it renders his descriptions, we think, more clear, and certainly more pleasant, is unfavourable for quotations: from which we have therefore been obliged to abstain, except in one or two instances. One recommendation of the work we ought to mention, as it is an important one, in a book intended for general use. The author has purposely abstained from the introduction of plates, in order to render it less expensive; and therefore more accessible than the works of Carswell, Cruveilhier, and others. The second volume has not yet appeared, and we regret to learn that the health of Dr. Hodgkin is such as to afford no present probability of his prosecuting the work. E. W.

ARTICLE XIII. *First Principles of Medicine*. By ARCHIBALD BILLING, M. D., &c. &c. Third Edition, considerably Enlarged and Improved. 8vo. pp. 282. London: 1838.

DR. BILLING deserves the thanks of the profession for his attempt, in the volume before us, to reduce into a small compass, and at the same time to simplify as much as possible, the principles of general pathology and therapeutics. His doctrines of the nature and treatment of diseases are